November 8, 2005

MEMORANDUM

FROM: Anna Treinies
Toxicologist, Superfund Technical Support Team

TO: Rafael Casanova
Project Manager, Superfund ARK/TX Program Management Section

RE: Comments on Remedial Investigation/Feasibility Study (RI/FS) Documents for Falcon Refinery, Ingleside, Texas

Section 2.0 Site Background and Setting
It is unfortunate that NORCO did not fully assess the contamination at the facility prior to purchase the property from Falcon Refining. Legally however, NORCO is now financially responsible for any contamination at the site regardless when the contamination occurred. While it is important to understand the historical uses of the property to understand the potential area of contamination, it does not eliminate the responsibility of NORCO to address contamination at the site.

Section 2.2.1.6 Human Population and Land Use Residential Neighbors / Potential Concerns
Debbie Belt Property – 113 Thayer Road

- Concerns with odor/contamination of well water
- Vapor intrusion may be an issue in residential homes adjacent to the refinery.

Mr. Salinas and Brenda Shedd - Thayer Road

- Concern with oily substance spilling into the back yard
- Later clarified as the pumping of oily substance into the wetlands within 500 feet of the yard. The source was thought to be ARM Refining (Now Plains Marketing).
- Vapor intrusion may be an issue in residential homes adjacent to the refinery.

Brenda Carroll – 1322 Sunray Road

- Oily substance spilled into her backyard
- No longer use the on site well because of hydrocarbon odor
- Vapor intrusion may be an issue in residential homes adjacent to the refinery.
- Brenda Carroll's son fell in a oil filled sink hole (trespasser scenario) See Page 8

Due to the history of offsite releases in to residential areas, the sampling plan should specifically address the approach to characterizing risk to offsite receptors.

Section 2.2.3 Nature and Extent of Contamination
Areas/Media that will need to be investigated include: drainage systems, pipelines, wetland areas, residential yard (oily releases to neighboring homes), residential wells, residential indoor air (vapor intrusion potential), on site processing areas, tank storage areas, other areas of

potential concern on site. Fishing and hunting scenarios will need to be developed to address duck hunting in the wetland area and fishing in the areas adjacent to the facility (potential for the bioaccumulation of COCs into fish) for possible consumption.
Some site specific concerns:

- Chromium reported in the cooling tower – disposal of cooling tower sludge on site. These sludges were sampled and were reported to contain 8020 mg/kg of total chromium.
- Vinyl acetate release
- Untreated waste inside tank berms
- Cracked surface impoundment on-site
- Docking facility
- Potential for used oil (chlorinated hydrocarbons/PCBs/other).
- 45,000 gallon oil spill in 1985 into the wetland area. Because the facility was operating as a waste oil recycler, there was a potential for the release of volatiles, semi-volatiles, metals and PCBs.
- Untreated wastewater was released around tanks 10, 11, 26 and 27. Sludge was dumped in the berm around tank 13 and contained primarily PAH's.
- Historic wastewater releases of Butanol, cyclohexanediol, phenylethanol, N,N-diphenylamine, and xylene (Page 10).
- Numerous oil spills have been reported along the pipeline over the years. COC identified in the spill in 1995 included mercury, lead, 1,2-dichloroethane, benzene, ethylbenzene, styrene, toluene, xylenes, naphthalene, phenanthrene, pyrene, methyl t-butyl ether, and vinyl acetate [also found in tanks N1(Tank 32)and N2 (Tank 33)].
- Criminal investigation regarding the recycling of mineral spirits. Mineral spirits were co-mingled with vinyl acetate rendering the liquid as a hazardous waste (spent solvent).
- Groundwater contamination was reported at the NORCO facility according to a March 7, 2000 report. COCs include 1,2-dichloroethane, 4-methyl-2-pentanone, benzene, ethyl benzene, xylenes, benzene, styrene and toluene.
- Crude oil release from Tank 7 from the North Site (up to 500 barrels of crude oil). Some of the material traveled along the drainage ditch and was deposited on Brenda Shedds driveway on Thayer road. (Page 12)
- Heavy rains caused a release from Tanks 26 and 27 at the refinery overflow and released oil. The content of these tanks is currently being removed by NORCO.

Some Groundwater Concerns:

- Three monitoring wells to the north side of the facility were sampled and are impacted by hydrocarbons. Given the significant history of on site spills and leaks, a comprehensive groundwater sampling plan needs to be implemented. Figure 14 indicates that Plains Marketing is down gradient of NORCO rather than the other way around.

Some Soil Concerns:

- Historic spill near Tank 17. The slop oil migrated east and entered the area near Tanks 12-14.
- Bottom sediments from oil Tank 15 were pumped into the berm area.
- Temporary pond constructed to dispose of treated effluent (oily substance).

- Temporary staging of API sludges near Tank 30.
- History of accepting oil contaminated with organic solvents. Some of this material appears to have been disposed of in the wastewater from the facility.
- History of multiple spills along the pipeline.
- Naphtha stabilizer unit was reported as leaking in the main process area.

Other Sources (Page 18)
There is the potential that the Plains Marketing Facility just North of the facility is impacting the groundwater at NORCO. Further delineation of the direction of groundwater flow may be necessary to better understand the releases to groundwater and identify the source of contamination.

Section 3.0 Initial Evaluation
The Conceptual Site Model should address both on site and potential off site risk in the residential area. The site conceptual model should address on site industrial worker, construction worker and trespasser scenarios and the offsite scenario should address contamination of residential properties, groundwater contamination (and the potential for vapor intrusion), fish consumption, and hunting.

Section 5.5.2 BHHRA Objective
This section is generic and really does not address any of the specific approaches to be used in the Baseline Risk Assessment.

Section 5.5.3 Data Evaluation
Based on the limited amount of sampling data to date, it is anticipated that significant data gaps remain for both the on site and off site contamination. The residential homes will need to be better characterized along with the wetland areas. Data gap will need to be address in both the on-site and off-site groundwater as well as in soil and sediment.

Section 5.5.4 Guidelines for Data Reduction
The elimination of COPC can be assessed after all data gaps are filled, data quality is assessed and the PRP is able to reach adequate detection limits for the COPCs as they are compared to screening values.

Field sampling analytical QA/QC requirements and detection limit must meet the EPA data quality objectives to be used in the risk assessment screening process or the Baseline Risk Assessment. COPCs can only be eliminated if the facility can demonstrate that the detection limits were adequately low (as compared to screening values) and demonstrate that the quality of the data is adequate.

Section 5.5.5 Guidelines for Selection of Chemical of Potential Concern (COPCs)
The guidelines for COPCs do not address the assessment of sediment.

Inorganic chemicals - (Second bullet on Page 25) Inorganic chemicals should still be evaluated as COPCs but can be separately discussed in the uncertainty analysis. Justification for the

elimination of an inorganic COPC can be discussed following the Baseline Risk Assessment and the decision can be made at this time which inorganic COPCs to eliminate.

Section 5.5.6 Conceptual Exposure Pathway Assessment
The exposure pathway assessment should include an assessment of the off-site residential exposure scenario as well on the on-site receptors. Additionally, the off-site fish consumption and hunting scenarios should be addressed in the off-site receptor scenario.

Section 5.5.9 Surface Water and Groundwater Resources and Uses
The wetland area is potentially used for duck hunting as reported by the EPA Remedial Project Manager (RPM). This route of potential exposure should be assessed for the wetland area.

Similarly, the intercoastal waterway and Redfish bay should be assessed for the fish consumption uptake route of exposure and recreational contact.

Residential groundwater wells should be assessed in the risk assessment as a potential route of exposure. Additionally, vapor intrusion from COPC's in groundwater should be assess for the residential areas adjacent to the facility.

Section 5.5.10 Potentially Exposed Populations
Other exposure pathways that may need to be assessed include but are not limited to the trespasser scenario, and the on site construction worker scenario. Given that the land is not zoned specifically for industrial use, it may be necessary to include an institutional control or to assess the on site risk using a residential exposure scenario should the future use of the property ever change.

Section 5.5.13 Exposure Point Concentrations
The exposure point concentration (EPC) should be determined using the 95% upper confidence limit of the arithmetic mean or the maximum concentration (if the sample size is to small). It is not appropriate to use the arithmetic mean for an exposure point concentration rather than the 95% UCL or maximum concentration.

Regarding the statistical evaluation of the 95% UCL, it should not be assumed that the data are lognormally distributed. A statistician should evaluate the data to determine the distribution type and use appropriate statistics to establish the 95% UCL.

Section 5.5.15 Toxicity Assessment and Documentation
Page 32 – If an EPA approved toxicity value is not available it may be appropriate to use a surrogate value (ie. Benzo(a)pyrene for a particular PAH) rather than only evaluate the constituent qualitatively.

Subchronic reference doses should not be used instead of the chronic standards for the subchronic exposure period. The subchronic standards available from EPA have not been through the same level of peer review and therefore are not recommended for use at this time.

Section 5.5.17 Carcinogenic Risk
The carcinogenic risk should be calculated with a potential excess cancer risk of $1x10^{-6}$ risk level. A risk management decision can be discussed at a later phase in the risk assessment to consider other options in the acceptable risk range.

Section 5.5.19 Approach for Developing Preliminary Remediation Goals
EPA does not support establishing a PRG with and HI of 3. (Page 35) Additionally, the carcinogenic PRG should be established at the $1x10^{-6}$ risk level.

Figure 15 – Human Health Risk Assessment Conceptual Site Model
A hunting exposure route should be added to the CMS. According the EPA RPM there is some duck hunting that takes place in the wetland area. Additionally, a trespasser scenario should be considered in the CMS for both the on site area (that are not fence in) and the wetland area that does not have restricted access.

The pathways identified as a low potential for exposure (symbol ○):

- A trespasser scenario should be included for the on site soil, sediment in the wetland are and the waste piles on site.
- Due to the shallow nature of the groundwater in the area. Groundwater should be considered in a potential construction worker scenario.

RI/FS Field Sampling Plan
Section 4.0 Sampling Objectives
It is understood that some areas (currently in removal action status) may not be able to be sampled at this time. The sampling plan still needs to specify the manner in which these areas will be characterized when the removal action is completed. What sampling points (confirmatory samples or overall sampling) will be completed as part of the overall site assessment.

The North Side sampling may need to include additional off site sampling beyond the planned sampling on two residential areas near the facility. Any contamination that potentially migrates off-site will need to be investigated.

Analytical Methodology's should be provided in the Field Sampling Plan. Analysis should include metals, mercury, chromium VI, VOCs, SVOCs, and PCBs. A list should be provided for all constituents that will be analyzed along with the detection limit that will be achieved. These detection limits should be below the appropriate risk screening levels. The list of constituents analyzed should not be narrowed down until a full initial investigation is completed and the constituents of concern are identified throughout the facility on impacted areas offsite.

Section 5.0 On-Site Sample Locations and Frequency
EPA does not agree that judgmental sampling of obvious hot spots in the process area is adequate to define the areas of concern. There could be other area of contamination in the process area that would not be addressed using this approach. A statistically significant number of random samples (grid samples) should be collected to characterize the area.

Statistically representative samples should be collected from all areas of the facility as well as in residential areas with a history of releases. Sampling conducted during the HRS is not adequate to assess the Area of Concern.

Page 5 - It is not appropriate to limit sampling efforts to areas that have stained soil. A complete investigation of the area will need to include some random statistical samples. It appears that this section overviews the sampling conducted during the HRS rather than identify data gaps and address additional sampling that will required.

Section 5.1.4 North Side Soil Investigation (AOC-1)
Statistically representative soil boring should be collected in addition to the judgmental sample locations. Sampling conducted during the HRS is not adequate to assess the Area of Concern.

Section 5.2.1 South Site Field Sampling Plan
The South Site sampling should include statistically representative samples in addition to AOC judgmental samples. It is not appropriate to rely on previous sampling events (HRS) to characterize risk. Data gaps must be identified and addressed in the Field Sampling Plan.

Section 5.2.2.3 AOC-3 Status as of May 2005
It is irrelevant that there is no visible evidence of spilled benzene. Contamination is not assessed visually, it is assessed analytically. All areas must be assessed using statistically representative sampling because contamination is not limited to areas with obvious soil stains.

Section 5.2.3.4 AOC-4 Soil Investigation
The northeast perimeter of AOC-4 must include sampling of the offsite residential area on Thayer Road. Due to historic releases in the area the off site residential area will need to be sampled. Ground water samples will also need to be assessed for the potential indoor air route of exposure (due to vapor intrusion).

Section 6.1 AOC's 8, 9, 10 (Wetland)
It is not appropriate to delay sampling of the wetland area in the field sampling plan. This is a significant data gap and can not be ignored.

Section 6.2.2 AOC-12 Sediment Investigation
Collecting only 3 sediment samples is extremely limited. The maximum detected concentrations will need to be used to assess risk if only 3 samples are collected.

Section 6.3.1 AOC-13 Background Information
Due to the historic release to the drainage ditch along Bishop Road (and the Shedd property), this area will need to be assessed for potential risk to an offsite residential receptor. The extent of the release may be beyond the area that is now paved.

Section 6.5.1 AOC-15 Background Information
The NPDES discharge point should be sampled despite the consultation with the former

consultant to Falcon Refinery. There is a possibility of the discharge point being used without Mr. Standifer being aware of its use. The analytical results can not be replaced by speculation about the usage of the NPDES discharge point.

Section 6.6.1 AOC-16 Background Information
The barge docking facility must be sampled to characterize the historic releases. When NORCO purchased the property from Falcon Refinery, the company assumed responsibility for contamination that may be found on the property.

Section 7.0 General Sampling Locations
Section 7.0 fails to address the sample methodology's that will be used to assess metals, mercury, chromium VI, VOCs, SVOCs, and PCBs. A complete list of analytes (for each media of concern) and detection limits should be provided in this section.

Quality Assurance Project Plan
Section A6.1 Problem Definition (On Site Sampling)
Random grid sampling should be implemented in the AOCs as well as in areas that are not associated with the former process or storage areas of the refinery. It is not adequate to only use judgmental samples in the AOCs.

Section A8.1.3.3 Identify the Information Needed to Establish the Action Level
There is no mention of the carcinogenic screening values to be used in the risk assessment screen. Carcinogenic screening levels should be assessed using the $1X10^{-6}$ risk level.

Section A8.1.4.3 Define the Temporal Boundaries
The risk assessment can not be completed until all exposure areas are assessed. The wetland area will need to be assessed as a part of the risk assessment. The offsite exposure scenario must address exposure to the wetlands (during hunting activities) and the consumption of fish and fowl that may be impacted by sediment contamination in the wetland area.

Section 8.1.4.4 Define the Scale of Decision Making
This section inappropriately limits the assessment of the AOC investigation to the judgmental samples that are collected. Grid samples will also need to be collected from these areas to ensure that the data set has a statistically representative number of samples.

It is not clear what the statement "decisions will be made to determine which, if any, aquifers are impacted". What kind of decisions are being referred to in this section. The aquifers will be determined to be contaminated if they exceed risk based screening levels. This comment applies to the off-site soil investigation as well as the off-site sediment investigation as well.

The initial round of sampling needs to characterize the off-site risk for the risk assessment to move forward. Any delays in sampling spills, impacted area off-site and the wetlands will likewise delay the completion of a risk assessment. The risk assessment must include all potential exposure areas to account for the cumulative effects from multiple pathways of exposure (ie. Dermal contact with soil/water sediment, incidental ingestion of

soil/water/sediment and the consumption of fish/fowl from the area, etc).

Section A8.1.5.3 Confirm that the Risk-based Screening Levels Exceed Measurement Detection Limits

Please provide a list of constituents that have a practical quantitation limit that is exceed the EPA Region 6 MSSLs. Is there another methodology that could be used to achieve lower detection limits? The methodology's should be assessed to try to achieve lower detection limits. Specific methodology's for PCBs should also be evaluated for the preferred format for the human health and ecological risk assessment (congeners). A separate analysis for mercury may also be necessary to achieve detection limit that are lower than screening values.

Given that only 60 percent of the chemicals have water based detection limits lower that screening levels, it would be better to explore the methodology's now rather than explore the issue at a later stage of the investigation.

Table 6 Required Quantitation Limits for Aqueous COPCs with Screening Values

This table does not include a complete list of potential COPCs. The analytical methodology's should include a broad list of potential COPCs (such as the Appendix 8 RCRA constituents) along with the appropriate screening values. The list provided on Table 6 appears to address only a limited list of COPCs.